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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/714,133	11/14/2003	Tsuyoshi Ohyama	09792909-5730	3928

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EXAMINER


SCHECHECTER, ANDREW M

ART UNIT PAPER NUMBER

2871

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/714,133	Applicant(s) OHYAMA ET AL. 
	Examiner Andrew Schechter	Art Unit 2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 04 August 2005.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-45 is/are pending in the application.
4a) Of the above claim(s) 8-10 and 23-45 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-7,11-17,21 and 22 is/are rejected.
- 7) Claim(s) 18-20 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 14 September 2003 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: _____.

DETAILED ACTION

Drawings

1. Figures 27 and 28 should be designated by a legend such as --Prior Art-- or --Related Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

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only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-4, 16, and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by *Moon*, U.S. Patent No. 6,621,543.

Moon discloses [see Fig. 5, for instance] a liquid crystal display comprising a pair of substrates [101, 105], a liquid crystal layer [113], wherein the liquid crystal display has a reflective area [not "H"] and a transmissive area ["H"], and wherein at least one of the substrates is provided with a retardation film [106] whose phase difference differs between the reflective area and the transmissive area [col. 6, lines 10-24, for instance]. Claim 1 is therefore anticipated.

The retardation film is provided on a surface of the substrate which faces the liquid crystal layer, so claim 2 is also anticipated. The retardation film is provided only in the reflective area [col. 6, lines 21-23], so claim 3 is also anticipated. The retardation film comprises a $\lambda/4$ layer [col. 3, lines 53-58, col. 8, lines 28-31], so claim 4 is also anticipated.

Moon discloses, as discussed above, the method of making this LCD, comprising forming a retardation film on at least one of the substrates and patterning the retardation film such that the retardation film remains at least in the reflective area and the phase difference of the retardation film differs between the reflective area and the transmissive area, so claim 16 is also anticipated.

The retardation film remains only in the reflective area, as discussed above, so claim 17 is also anticipated.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Moon*, U.S. Patent No. 6,621,543, as applied above, in view of *Yamanaka*, Japanese Patent Document No. 10-068816.

[A translation of *Yamanaka* will be provided with the following office action, if desired.]

Moon does not disclose the retardation film further comprising a retardation layer compensating for chromatic dispersion which occurs at the $\lambda/4$ layer. *Yamanaka* discloses a retardation film which acts as a $\lambda/4$ retarder (as desired in *Moon*) which comprises a $\lambda/4$ layer and a $\lambda/2$ layer, with the $\lambda/2$ layer compensating for chromatic dispersion which occurs at the $\lambda/4$ layer [see abstract, the combination of the two converts light "regardless of wavelengths in a range of visible light", whereas the $\lambda/4$ layer by itself would have a wavelength dependence (chromatic dispersion)]. It would have been obvious to one of ordinary skill in the art at the time of the invention to use *Yamanaka's* retarder in the device of *Moon*, motivated by *Yamanaka's* teaching that this provides an achromatic retarder. Claims 5 and 6 are therefore unpatentable.

7. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Moon*, U.S. Patent No. 6,621,543, as applied above, in view of *Kubota et al.*, U.S. Patent No. 6,771,334 and *Kitagawa et al.*, U.S. Patent No. 6,404,469.

Moon does not disclose that the retardation film is composed of a liquid crystal polymer obtained by curing a UV-curable liquid crystal monomer in a nematic phase. *Kubota* discloses an analogous device and teaches that the retardation film with differing regions can be obtained by curing a "UV crosslinking liquid crystal polymer" [col. 10, lines 34-40], though *Kubota* is silent on the nematic phase; *Kitagawa* discloses such a compensator in a nematic phase [col. 3, lines 6-17]. It would have been obvious to one of ordinary skill in the art at the time of the invention to make the retardation layer a liquid crystal polymer of such a composition in a nematic phase, motivated by *Kitagawa's* teaching that the production process for such sheets is known and they are commercially available (reducing uncertainties and experimentation in manufacturing), and *Kubota's* and *Kitagawa's* teaching that they allow control of optical characteristics including retardation. Claims 11 and 12 are therefore unpatentable.

8. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Moon*, U.S. Patent No. 6,621,543, as applied above.

Moon discloses the step of patterning the retardation film leaves it only in the reflective region and not the transmissive region, but does not explicitly disclose an exposure process and a development process. The examiner takes official notice that it is well-known to pattern such layers using photolithographic processes including exposure and development. It would have been obvious to one of ordinary skill in the

art at the time of the invention to do so, motivated by the desire to use conventional production methods (which are relatively inexpensive and require little experimentation) to produce *Moon's* layer. Claim 21 is therefore unpatentable.

9. Claims 1, 7, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Kim*, U.S. Patent No. 6,570,634 in view of *Kubota et al.*, U.S. Patent No. 6,771,334 in view of *Baek*, U.S. Patent No. 6,657,689.

Kim discloses [see Fig. 6, for instance] an LCD with substrates and liquid crystal, with reflective and transmissive areas. *Kim* discloses a retardation film [$\lambda/4$ plate 520] but does not disclose a retardation film whose phase difference differs between the reflective and transmissive area.

Kubota teaches having the retardation film having differing characteristics between the reflective and transmissive areas [col. 10, lines 34-40], and it would have been obvious to one of ordinary skill in the art at the time of the invention to do so, motivated by *Kubota's* teaching that this more effectively increases the viewing angle and enhances the contrast. *Kubota* does not specify that the differing characteristics include differing phase differences.

Baek discloses an analogous transfective device with an analogous retardation film, and teaches that the thickness of the retardation film (and hence its phase difference) is adjusted in order to achieve a complete dark state and high contrast [see abstract]. It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to have the phase difference be the characteristic varied in the device of *Kim* in view of *Kubota*, motivated by this teaching that by adjusting the phase

difference the contrast and dark state quality can be improved. Claim 1 is therefore unpatentable.

Kim discloses that the liquid crystal has a phase difference of $\lambda/4$ in the reflective area and $\lambda/2$ in the transmissive area in a voltage on or voltage off state [col. 8, lines 6-8], so claim 7 is also unpatentable.

Baek teaches that the adjustment of the phase difference of the retardation film in the transmissive area cancels a residual phase difference which occurs when a sufficient voltage is applied to the liquid crystal layer [see Fig. 3, col. 3, lines 42-59]; it would therefore have been obvious to one of ordinary skill in the art at the time of the invention to do so in the above device, motivated by *Baek's* teaching that doing so prevents light leakage. Claim 15 is therefore unpatentable.

10. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Kim*, U.S. Patent No. 6,570,634 in view of *Kubota et al.*, U.S. Patent No. 6,771,334 in view of *Baek*, U.S. Patent No. 6,657,689 as applied above, and further in view of *Abileah et al.*, U.S. Patent No. 6,169,590.

Kim discloses color filters [516] but does not disclose that the phase difference of the retardation film is determined in accordance with the wavelength of each color filter. *Abileah* teaches that by personalizing the retardation films of the different color subpixels in this way, the problem of different color leakages at different viewing angles can be eliminated [see abstract, col. 23, lines 31-39]. It would therefore having been obvious to one of ordinary skill in the art at the time of the invention to do so, motivated by the this teaching of *Abileah*. Claim 13 is therefore also unpatentable.

In particular, since *Kim* discloses a $\lambda/4$ retardation film [520], the retardation film of the combined device will have a phase difference of $\lambda/4$ in accordance with the wavelength of each color filter, so claim 14 is also unpatentable.

11. Claims 16 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Ikeno et al.*, U.S. Patent No. 6,862,058 in view of *Kubota et al.*, U.S. Patent No. 6,771,334 in view of *Baek*, U.S. Patent No. 6,657,689.

Ikeno discloses [see Fig. 2, for instance] a method of manufacturing a transfective LCD with steps of forming an alignment film by mask rubbing such that the alignment direction of the alignment film differs [one vertical, one horizontal] between the reflective and transmissive areas on a surface of at least one of the substrates which faces the liquid crystal. *Ikeno* does not disclose patterning a retardation film such that it remains in at least the reflective area and the phase difference differs in the two areas.

Kubota teaches having a retardation film (in both areas) and also having differing characteristics between the reflective and transmissive areas [col. 10, lines 34-40], and it would have been obvious to one of ordinary skill in the art at the time of the invention to do so, motivated by *Kubota's* teaching that this more effectively increases the viewing angle and enhances the contrast. *Kubota* does not specify that the differing characteristics include differing phase differences.

Baek discloses an analogous transfective device with an analogous retardation film, and teaches that the thickness of the retardation film (and hence its phase difference) is adjusted in order to achieve a complete dark state and high contrast [see

abstract]. It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to have the phase difference be the characteristic varied in the device of *Ikeno* in view of *Kubota*, motivated by this teaching that by adjusting the phase difference the contrast and dark state quality can be improved. Claim 16 and 22 are therefore unpatentable.

Allowable Subject Matter

12. Claims 18-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. The following is a statement of reasons for the indication of allowable subject matter:

The prior art does not disclose the method of claim 18, in particular the limitation that the retardation film patterned to have differing phase differences in the reflective and transmissive areas is formed on an alignment film. Claim 18 would therefore be allowable if rewritten appropriately, as would claims 19 and 20 which depend from it.

Election/Restrictions


14. Applicant's election without traverse of species A1, B1, C1, and D1 in the reply filed on 4 August 2005 is acknowledged.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Schechter whose telephone number is (571) 272-2302. The examiner can normally be reached on Monday - Friday, 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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14 October 2005